



**TELANGANA TRIBAL WELFARE  
RESIDENTIAL DEGREE COLLEGE (GIRLS),  
DAMMAPETA**



**Bhadrachalam District, Telangana State-507115**  
(Affiliated by Kakatiya University, Warangal, Telangana)

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**PROGRAMME OUTCOMES/  
PROGRAMME SPECIFIC  
OUTCOMES AND  
COURSE OUTCOMES**

## **Bachelor of Science (B.Sc.):**

The Bachelor of Science requires the Three Years of Full time study consisting of six semesters. It translates in making a significant investment in one's professional career. In addition to the enhanced career prospects that can be gained by opting it a students also develop valuable personal skills and fulfill a crucial prerequisite to Master studies. It concentrates on providing opportunities for students to show outstanding performance at subject knowledge and understanding, intellectual skills related to the subject, transferable skills and attitudes through introduction of a wide range of topics, reasoning through unfamiliar problems, critical and analytical thinking, It provides the tools to investigate topics in depth, in order to find a systematic approach in analyzing and building up knowledge to reach a solution. The developments of teamwork and leadership abilities are imbibed to give importance to Safe Laboratory Practice.

- Students will have a broad foundation in the three major subjects of their choice with scientific reasoning, problem solving and analytical skills.
- The students are trained in a breadth and depth of experimental techniques using modern instrumentation which help them to take up higher education or jobs after the course.
- They develop the ability to effectively communicate scientific information in written and oral formats.
- They acquire the ability to work in teams and apply basic ethical principles.

## DEPARTMENT OF PHYSICS

### Programme Outcomes (POs):

Students having an academic background of science at 10+2 level can pursue B.Sc programme in various branches. After the completion of the B.Sc degree there are various options available for the science students, they can pursue master degree in Science i.e. M.Sc, work in research related fields and can even look for professional job oriented courses. Often, in some reputed universities or colleges the students are recruited directly by big MNC's after the completion of the course. The student is also eligible for the job of a Medical Representative. The student after graduating will be eligible for various government exams conducted by UPSC, SSC etc.

### Programme Specific Outcomes (PSOs):

By the end of the course, the students will be able to:

PSO1: Students are expected to acquire knowledge in physics, including the major premises of classical mechanics, quantum mechanics, electromagnetic theory, electronics, optics, special theory of relativity and modern physics.

PSO2: Students are also expected to develop written and oral communication skills in communicating physics-related topics.

PSO3: Students should learn how to design and conduct an experiment (or series of experiments) demonstrating their understanding of the scientific method and processes. Not only that they are expected to have an understanding of the analytical methods required to interpret and analyze results and draw conclusions as supported by their data.

PSO4: Students will develop the proficiency in the acquisition of data using a variety of laboratory instruments and in the analysis and interpretation of such data.

PSO5: Students will learn the applications of numerical techniques for modeling physical systems for which analytical methods are inappropriate or of limited utility.

PSO6: Students will realize and develop an understanding of the impact of physics and science on society.

PSO7: Apply conceptual understanding of the physics to general real-world situations.

PSO8: Describe the methodology of science and the relationship between observation and theory.

PSO9: Learn to minimize contributing variables and recognize the limitations of equipment.

PSO10: Discover of physics concepts in other disciplines such as mathematics, computer science, engineering, and chemistry.

PSO11: Develop the following experimental tools: Numerically model simple physical systems using Euler's method, curve fitting, and error analysis.

PSO12: Analyze physical problems and develop correct solutions using natural laws.

**Course Outcomes:**

S. No.	Semester	Course	Credits	Course Outcomes
1	I	Mechanics	5	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>➤ Understand the concept of central forces and vector analysis.</li> <li>➤ Study the behavior of rigid body dynamics</li> <li>➤ Understand the negative result of michelson morley experiment, galilean and lorentz transformation</li> <li>➤ Students will be able to investigate Young's modulus and rigidity modulus</li> <li>➤ Students are able to understand various properties of liquids i.e. surface tension, refractive index, viscosity</li> </ul>
2	II	Waves and Oscillations	5	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>➤ Understand the concept of fundamentals of vibrations.</li> <li>➤ Understand the concept simple harmonic motion, Damped Oscillations and Force oscillations.</li> <li>➤ Understand the concept of vibrating in strings and bars.</li> <li>➤ Understand the oscillations in simple, compound pendulum and bifilar suspension.</li> <li>➤ Understand the concept laws of stretched strings</li> </ul>
3	III	Thermodynamics	5	<p>By the end of this course, Students will be able to:</p> <ul style="list-style-type: none"> <li>➤ Understand the concepts kinetic theory of gases.</li> <li>➤ Understand the concept of Low temperature physics and black body radiation</li> <li>➤ Understand the concept of Maxwell's Equations</li> <li>➤ Understand thermal conductivity of a bad conductor by Lee's method.</li> <li>➤ Understand Specific heat of a liquid by</li> </ul>

				applying Newton's law of cooling correction.
4	IV	Optics	5	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>➤ Overview of Interference, Diffraction and Polarization.</li> <li>➤ Details of Aberrations and Fiber Optics</li> <li>➤ Understand measurement of wavelength using Newton's Rings method and minimum deviation , Normal method</li> <li>➤ Understand Resolving power of telescope, Dispersive power of prism</li> <li>➤ Understand the optical rotation.</li> </ul>
5	V Paper - V	Electromagnetism	4	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>➤ Study the electric field using coulomb's inverse square law in electrostatics of current</li> <li>➤ Understand the chemical and heating effect of current</li> <li>➤ Understand the relations between b, h and m</li> <li>➤ Understand the faradays laws of electromagnetic induction</li> <li>➤ Understand the Thevenin Theorem, Norton Theorem, Superposition Theorem and maximum power transfer theorem.</li> <li>➤ To determine a small resistance by Carey Foster's bridge.</li> <li>➤ To determine the (a) current sensitivity, (b) charge sensitivity, and (c) CDR of a B.G</li> </ul>
6	V Paper - VI	Solid State Physics	4	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>➤ Understand the basic concepts of force between atoms and bonding between molecules</li> <li>➤ Analyze the relationship between conductors and insulators and super conductivity</li> <li>➤ Understand about types of lasers and its functioning</li> <li>➤ Understand the PE Hysteresis loop of a Ferroelectric Crystal, the BH curve of Fe using Solenoid &amp; energy loss from Hysteresis.</li> <li>➤ Understand the resistivity of a semiconductor (Ge) with temperature</li> </ul>

				by four-probe method.
7	VI Paper - VII	Modern Physics	4	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>➤ Understand Wave Particle Duality de Broglie hypothesis, Experimental confirmation of matter wave, Davisson Germer Experiment, velocity of de Broglie wave.</li> <li>➤ Understand Nuclear Physics Size and structure of atomic nucleus and its relation with atomic weight.</li> <li>➤ Understand Radioactivity Understand Atomic Spectra and Models of classical physics.</li> <li>➤ Understand the Thevenin's Theorem, Norton Theorem, Superposition Theorem and maximum power transfer theorem.</li> <li>➤ To determine a small resistance by Carey Foster's bridge.</li> <li>➤ To determine the (a) current sensitivity, (b) charge sensitivity, and (c) CDR of a B.G</li> </ul>
8	VI Paper - VIII	Basic Electronics	4	<ul style="list-style-type: none"> <li>➤ Students will be able to:</li> <li>➤ Understand Network Elements and Network Theorems.</li> <li>➤ Understand Band theory of P-N junction, diodes and transistors.</li> <li>➤ Understand the importance of Digital Electronics.</li> <li>➤ Understand AND, OR, NOT, NAND and NOR gates Truth table</li> <li>➤ Understand Characteristics of a Transistor in CE configuration and R.C. coupled amplifier – frequency response.</li> <li>➤ Understand De Morgan's Theorem and Zener diode V-I characteristics.</li> </ul>

